Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims

Claims 1-12 (canceled)

Claim 13 (currently amended): ~~Method~~ A method for producing resist profiled elements with an electron beam lithography system, which produces the electron beam with a primary energy, the beam axis of which is largely perpendicular to a resist layer in which the resist profile is produced, ~~comprises~~ comprising the steps of:

providing the resist layer in the form of a negative resist on a substrate;

exposing surfaces of a selected resist system of substrate, resist and thickness of the resist layer with different doses and determining a contrast curve after development the measured residual thickness of the resist layer;

determining for a later defined adjustment of the electron beam lithography system a scattering cone and a size thereof in relation to the resist system, wherein a plurality of single lines are scribed in the resist layer with a probe size as small as possible and thereby obtaining a residual resist thickness distribution which is dependent on the site of incidence of the electron beam and being converted with the help of the contrast curve into an electron dose distribution that is the scattering cone;

determining [[of]] from the contrast curve the electron dose distribution of the scattering cone the resulting resist thickness distribution, which depends from several parameters ~~that influence an electron surface dose, and~~;

adjusting the electron beam with regard to parameters including the electron surface dose, width of the generated resist profile, thickness of the resist layer, and/or the primary energy of the electron beam, such that ~~a resist profiled element that exhibits~~ a non-orthogonal resist profile is produced ~~as a result of irradiation of the resist layer by the electron beam~~ and the probe size is the smallest possible structure size; and

adjusting the probe size is quasi-continuously, whereby the primary energy of the

electron beam is continuously changeable, a lower energy limit of the primary electrons is 1 keV, and an upper energy limit of the primary electrons is 20 keV.

Claim 14 (currently amended): ~~Method~~ The method according to claim 13, wherein the electron surface dose is defined by parameters such as the type of substrate, type of resist, resist thickness, development rule, and primary energy of the electron beam, and wherein the electron beam is adjusted according to these parameters.

Claim 15 (currently amended): ~~Method~~ The method according to claim 13, wherein the resist profile comprises a grating structure that consists of an array of depressions and elevations.

Claim 16 (currently amended): ~~Method~~ The method according to claim 13, wherein a gradation curve of the used resist is taken.

Claim 17 (currently amended): ~~Method~~ The method according to claim 13, wherein with the primary energy of the electron beam, the development process, and the resist thickness held constant, a gradation of the resist is applied as a function of a standard resist thickness in relation to the standard electron surface dose used is applied before electron irradiation.

Claim 18 (currently amended): ~~Method~~ The method according to claim 17, wherein the gradation $S = (\frac{\Delta d}{d_0})/(\frac{\Delta D}{D_{max}})$ does not exceed the value of 1.5.

Claim 19 (currently amended): ~~Method~~ The method according to claim 18, wherein surfaces in the resist layer are exposed with a variable electron dose, and wherein the appropriate electron dose for the pertaining and residual resist thickness is determined after the development process.

Claim 20 (currently amended): ~~Method~~ The method according to claim 13, wherein one element of the profile of the grating structure consisting of depressions and elevations is

determined by the electron surface dose $D_B = \left(\frac{D_0}{(2n+1)}\right) \times \sum_{i=1}^{i=n} [f_e(x) + f_e(x - i \times b) + f_e(x + i \times b)]$ to be used.

Claim 21 (currently amended): ~~Method~~ The method according to claim 13, wherein a diameter of a scattering cone is produced by the amplitude of the primary energy of the electron beam in the resist layer around the site of incidence of the electron beam, whereby the diameter of the scattering cone is inversely proportional to the primary energy of the electron beam.

Claims 22-23 (canceled)

Claim 24 (currently amended): ~~Method~~ The method according to claim [[21]] 13, wherein the electron surface dose is defined by the parameters such as type of substrate, type of resist, resist thickness, development rule, and primary energy of the electron beam.